



# ***State of Michigan***

## ***Final Report***

### ***Records Management Application Pilot Project***

#### **Project Team Members:**

Jim Kinsella, Project Director

Doug Case, Electronic Records Analyst

Caryn Wojcik, Electronic Records Archivist

Mimi Dionne, Project Analyst

Deborah Gouin, Project Analyst

*December 30, 2002*

**National Historical Publications and Records Commission  
Grant #2000-059**

# MANAGING ELECTRONIC RECORDS IN THE 21<sup>ST</sup> CENTURY

## INTRODUCTION

It is increasingly common to see stories in the news about individuals or organization that got into trouble because their electronic mail was not properly managed. Either someone wrote something they should not have, or someone destroyed a message without proper authorization, or too many messages were kept either on a live server or on backup tapes for much too long. Of course, those of us in the records management and archives professions know that this problem is not isolated to e-mail. It has always existed in the paper world and also affects other types of electronic records. E-mail has simply made this problem more visible and personally identifiable.

In the State of Michigan, the Department of Management and Budget, Records Management Services, provides a variety of records management and storage services to the Executive Branch. The Department of History, Arts and Libraries, State Archives of Michigan, provides archival services for all branches of government, and records management services for local governments. Due to the nature of our responsibilities, our two agencies often collaborate to ensure that government records in all formats are properly managed and preserved. (This organization structure will change on December 22, 2002, when the Records Management Services will join the Department of History, Arts and Libraries.)

In 1998 the archives and records management programs collaborated to create a Michigan Government Electronic Records Committee (ERC), with representation from a variety of professional disciplines. Like our colleagues in other states, one of our first concerns was to formulate some type of policy or guideline about the retention of e-mail. We were aware of the lawsuits involving the National Archives; we knew what other states were doing; and yet we were not confident that anyone had a real solution to the problem. We concluded that no practical solution would be found to the problem if records managers, archivists, administrators and information technology professionals did not work together.

At one of the ERC meetings we discussed the development of an e-mail policy, as a method for determining the committee's perspective on this issue. A draft e-mail policy was circulated. It proposed that official e-mail be printed out and retained in a hardcopy format. The information technology community rejected this proposal, because it favored a technology solution. The ERC recognized that even among its membership some individuals currently retain every e-mail message they send and receive, while others destroy a majority of their e-mail immediately. The committee believed this inconsistency was an archival/records management problem, a technological problem and a liability for the state. It also recognized that other common desktop applications are used to create electronic records that are treated in a similar fashion. Clearly, the ERC preferred an automated process for classifying records and implementing retention requirements that would be both seamless and systematic.

It was not clear at first what this automated solution would look like. We did not know if we needed to custom design something, or if commercial products were available. We did not know what functionality we needed, or what we could expect to find. Fortunately, we were not alone

in our attempt to solve these problems. The U.S. Department of Defense (DoD) had already completed its development of standard 5015.2 for Records Management Applications (RMAs), and several commercial products were on the market that complied with this standard. The more we learned about the DoD standard and the various RMAs on the market, the more we realized that the first step in finding a solution was completed. While not perfect, the DoD standard answered the question about desired functionality. In addition, there clearly was not a need to custom-design a product with the necessary functionality. The question that remained, however, was would the commercial products work, and would people use them? Our research concluded that many state and federal agencies were using these products to manage paper records, but only a few federal government agencies actually tested these software products on electronic records.

With no other real solutions available to us, we decided to pursue RMAs further. The ERC agreed to support a pilot project that would test the ability of an RMA to provide a systematic process that was both user-friendly and could be implemented across the entire enterprise. However, ERC members urged the archives and records management staffs to include a business process analysis with our proposal for enterprise-wide re-engineering. The ERC also recommended that the pilot be conducted using Department of Management and Budget (DMB) offices. At the time, DMB was responsible for issuing information technology policies and standards with which the entire Executive Branch was required to comply. Therefore, DMB's ability to use the RMA would assist the ERC and the Chief Information Officer when they attempted to promote the concept of enterprise-wide implementation to other Executive Branch agencies, because they would have already tested the product in their own offices.

The next step was to secure funding for a pilot test of RMA software. For this, we turned to the National Historical Publications and Records Commission (NHPRC). NHPRC provided us with a two-year grant (beginning May 1, 2000, and later extended through September 30, 2002) that helped us purchase software, hire staff to handle the software implementation in two different environments, conduct business process analyses, and evaluate the RMA's ability to solve our electronic records management problems.

## WHAT IS A RMA AND HOW DOES IT WORK?

A Records Management Application (RMA) is a software application that provides a centralized repository for electronic records such as e-mail, word-processed documents, spreadsheets, digital images and more. This repository is stored on a networked server. Users create the same electronic documents that they have always needed to support their various business functions. However, instead of storing these documents in a wide variety of unorganized places, the documents are stored in the RMA's repository. Users are taught to file, search for and retrieve electronic documents using the RMA software.

When electronic documents are filed using an RMA they are classified according to a pre-defined file plan. Each organizational unit has a file plan that can be shared by all of the employees of that unit. Each file in the file plan is linked to a retention and disposal schedule, so the RMA software can automatically calculate when a document's retention period has expired. Using the file plan ensures that the electronic documents that are stored in the repository remain organized in a manner that is consistent for all of the unit's employees, and that they are retained

according to appropriate procedures (without relying upon individual people to properly implement retention requirements).

Once electronic documents are stored in the repository they cannot be altered. Copies can be retrieved and viewed, printed or edited. If an electronic document is edited, the new version can be filed into the RMA repository, and the RMA automatically assigns a new version number to the document, linking it to the original. All users of the RMA are assigned specific access rights that ensure that each person only has access to the files and documents in the repository they need. These access rights also allow groups of users to share documents and files that are stored in the repository. This reduces the need to store duplicate copies of the same document, and promotes collaboration among co-workers. Furthermore, all of the documents in the repository are full-text searchable, which means that they are very easy to find after they are filed, even if you don't know which file they are stored in.

## IMPLEMENTATION

### Personnel

Initially, the project team consisted of Jim Kinsella, the project director; Doug Case, the electronic records analyst; and Caryn Wojcik, the electronic records archivist. We had collaborated on many electronic record projects before the RMA Project, such as a pilot project for scheduling electronic records, developing a guideline for e-mail retention, and rules for imaging systems. We approached this project with enthusiasm, because we saw it as an opportunity to find a real solution with concrete results. The NHPRC grant provided us with funds to hire two additional people for the project team who would be responsible for training participants, developing file plans, and administering the software. The project analysts we hired were Mimi Dionne and Deborah Gouin. Mimi is a graduate of the University of Texas at Austin, and she began working on the project on May 15, 2000. Deborah is a graduate of Central Michigan University and Wayne State University, and she began working on the project on June 26, 2000. Mimi remained with the project team until October 19, 2001, when she accepted a position with the University of Texas at Houston, Health Science Center. During her time with the project team, Mimi participated in all aspects of phase I of the project. As a result of Mimi's departure from the project, the team asked NHPRC to allow us to extend the project through September 2002. This extension allowed us to use the money that had been allocated for Mimi's salary to pay Deborah for the additional months, and to continue our project activities. Deborah remained with the project team through September 27, 2002, when she accepted a position with Tarian Software. Deborah participated in both project phases I and II.

### Project Participants

When the project team designed the plan of work for the grant proposal we decided that we wanted to install and evaluate the software in two different administrative settings, so we could analyze whether the project participants' reactions to the RMA software would be consistent or different. The Director of the Office of Support Services (OSS) volunteered to purchase the RMA software and allow her employees to be recruited as the phase I participants. The project team decided that the phase I participants would use the RMA software for the entire duration of

the grant project (and we hoped beyond). The OSS was reorganized along with the rest of the Department of Management and Budget in January 2002. However, when phase I was initiated, it was the parent agency to the Records and Forms Management Division (now Records Management Services). It also consisted of Print and Graphics Services, Mail and Delivery/Materials Management Services, State and Federal Surplus, and the Consolidated Print Center. Approximately 60 people from OSS were selected to serve as project participants for phase I.

The project team then received permission from the DMB Director to recruit the department's executive office staff for phase II of the project, which would start approximately one year after phase I commenced. Approximately 20 people were selected to participate in phase II. Acceptance of the RMA software by the phase II participants was viewed to be crucial for developing a business case for implementing RMA software enterprise-wide.

A few months after the project started, however, various personnel changes and reorganizations (see section on Enterprise-Wide Implementation) resulted in the decision not to use the DMB Director's Office for phase II of the project. Instead, approximately 20 people from the Director's Office of the new Department of History, Arts and Libraries (HAL) were recruited to serve as the phase II project participants.

## Vendor Selection

In October 1999 we began the process of selecting an RMA product for the project. The vendor selection team included records managers, archivists, information technology professionals, and a user representative. We received proposals from five software vendors, and invited three to provide demonstrations of their product. Some of the major issues that the vendor selection team considered included: e-mail integration (the State of Michigan uses GroupWise software, and many RMA products only integrate with Microsoft Outlook), customer support, and ease of use. We counted the number of steps involved in filing an e-mail message and a word-processed document. By April 2000 the vendor selection team agreed to purchase ForeMost Enterprise 2.0, because it was the most user-friendly product of our choices. At the time of our purchase, ForeMost was produced by a company called Provenance Systems, Inc. The company name changed to TrueArc in May 2001, and in November 2002, Documentum announced its intention to purchase TrueArc.

## Software Installation

When the vendor selection team chose ForeMost we were informed that the Enterprise Version 2 would be released on June 1, 2000. We believed that this release date would work well with the project, since it was scheduled to begin in May. We wanted to purchase Version 2 because it contains significant technical improvements to Version 1 that make it easier to administer and deploy. By the time we finalized our contract, the release date for Version 2 was moved to June 29. We moved forward and scheduled installation and training for July. On July 10 several people from Provenance Systems, Inc. visited to conduct the official kick-off of the product installation and testing. During the remainder of that week their staff worked with the Department of Management and Budget (DMB), Information Technology Services Division (ITSD) to install ForeMost. The base product installation was successful. However, ForeMost

is designed to use activators that integrate the software with other applications used by the participant (such as Microsoft Word or Novell GroupWise). These activators allow the participant to file documents directly into ForeMost's repository from the native application. None of these activators worked correctly, and Provenance promised to fix the problem in time for our mid-August user training sessions. However, Provenance was unable to meet this deadline, and we had to revise our implementation schedule.

On September 8, Provenance informed us that the problems were fixed and that we could resume the project. On September 25-28 Provenance staff uninstalled and reinstalled Version 2. However, ITSD soon discovered that the activators were causing problems with our existing software. As a result, the software could not be installed on participant computers. Nevertheless, the project team decided to have ForeMost installed in the computer lab and to complete our own training.

On October 11-13, the project team attended administrator and end user training. We learned how to create user accounts, how to input file plans and retention schedules, how to assign access rights; and we learned how to file, search for and retrieve documents. However, we could not view the full functionality of the software, because the activators were not working. On October 17-18, the project team attended train-the-trainer training. Provenance staff taught us tips and techniques for teaching others to use ForeMost.

During this time, ITSD continued working with Provenance to correct the problems with the activators. By October 24 everyone believed that the problems were fixed. We installed ForeMost on four computers and began to test its functionality. At this time, the project team discovered other problems. Some of these problems were due to the activators, and some of these problems were due to the way ForeMost functions. We believed these functional problems caused unnecessary burdens to our project participants, because they increased the level of difficulty and time invested to file documents into the repository. Once again we were forced to postpone the implementation for our project participants that was scheduled for October 31.

On November 27 Provenance delivered a patch to fix the problems we were experiencing with the ForeMost integration with our e-mail software, GroupWise. The project team then evaluated our installation of ForeMost and determined that it was operating at a satisfactory level to go ahead with the deployment of the software. However, we continued to have concerns that some of the functionality of the software needed to improve for widespread deployment to be successful. We shared these concerns with Provenance and they informed us that they would fix most of the functional problems when a service pack was released in January 2001. Again, there were delays. On April 30 Provenance informed us that ForeMost Enterprise version 2.1 would be released instead of a service pack. The new version finally arrived on May 25.

Version 2.1 was installed on July 18, but it only contained one of the suggestions for improvement that we submitted to TrueArc (formerly Provenance) after our initial installation of the product. On January 23, 2002, ITSD installed ForeMost Enterprise 2.5. This version of the software included several features that our project team suggested TrueArc improve. We are pleased with these improvements, because they make the software more user friendly, however we are still hoping that other suggestions we have submitted will be included in future releases.

In mid-June 2001 we discovered that the version control feature in ForeMost had stopped working properly. It took ten months to resolve the issue. Even though TrueArc finally discovered the source of the problem, they never repaired it. At this point, we do not know what caused the problem in the first place, or why the feature is now working. This was a very frustrating experience for the project team, ITSD and for TrueArc. Unfortunately, we do not know how to prevent it from happening again.

Access to documents in the repository was interrupted on several occasions after we installed ForeMost. Some of these incidents only lasted a couple of hours, and some lasted for a week. These interruptions were caused by problems with the ForeMost indexing function or with the search function. The project team worked diligently each time to resolve these interruptions quickly, but often the repairs were beyond our expertise and control. We simply acted as a mediator between ITSD and TrueArc. After each interruption was resolved the project team made an effort to identify the cause of the problem, and tactics for preventing or quickly resolving future problems. However, losing access to documents in the repository is a significant problem, because it reduces user confidence in the software. Some of our project participants chose to stop using ForeMost after these incidents, because they considered it to be too unreliable.

Our final evaluation of ForeMost from a technical perspective is disappointing. Too many features of the product that was delivered to us contained flaws. Some flaws were design related, and others were bugs. We expected better testing before product releases, and we were frustrated by the time lost waiting for patches, work arounds or new versions.

## Software Deployment

Once we confirmed that ForeMost was working properly on the computers of the project team and in the computer lab, we authorized ITSD to deploy the software to the first group of participants we wanted to train. At this time, we determined that each participant's computer must be configured in multiple ways after the deployment for ForeMost to work properly. The project analysts would be responsible for this configuration work, and ITSD gave them instructions. We quickly learned that this was a bad idea.

The first phase I deployment to approximately 30 participants experienced several configuration problems. ITSD tried to resolve these problems, but it took a considerable amount of time to identify the cause of each problem and the appropriate solution. As a result, we had several frustrated participants, IT staff and project staff. We held a meeting between the project team and ITSD in early January 2001 to try to prevent these problems with the second deployment to an additional 20 participants. At this time, we believed that all of the configuration issues were identified and resolved. However, the second deployment was also problematic, and our participants blamed the project analysts for problems beyond their control and expertise. Another meeting with ITSD was held in late January to find a solution. ITSD decided to have its technicians configure the computers after software deployment, scheduling issues for deployment and configuration were also resolved. The third deployment in February to

approximately 10 participants went quite smoothly. All 60 of the project participants for phase I had ForeMost working on their computers.

The software deployment for phase II brought its own set of challenges. The project team originally hoped to complete the installation of the ForeMost software on the computers of the phase II participants by January 2002. Using that timeframe as a guide, the team worked to orient the new participants and develop their file plans. Unfortunately, several factors caused delays with the software deployment. Before the creation of HAL (see section on Enterprise-Wide Implementation), the HAL IT staff had worked for the Legislature; which operates on a completely different network than the Executive Branch. The ForeMost servers are maintained by DMB ITSD, and the two IT departments spent a considerable amount of time getting the two networks to communicate. In addition, approximately half of the phase II users needed to have their computers upgraded with new network connections, operating systems and e-mail software. HAL IT did not want to install ForeMost on these computers until those upgrades were completed. As a result, the software deployment for all of the phase II participants was not completed until July 2002.

## FILE PLANS

RMA software is unique because it is the only type of software on the market capable of implementing the retention requirements for the records that are stored in its repository. Other software products that store electronic records retain them indefinitely. From a user perspective, the primary change experienced with RMA software is a new location for storing and retrieving their records. Users no longer need to store their records in multiple places, such as a hard drive, network server, individual e-mail accounts, floppy disks, or a hard copy file. Instead, the RMA provides the users with a place to store a variety of electronic records together in a central repository. File plans are the most essential component of an RMA.

File plans are created according to the business functions that the records support. The file plan provides the classification scheme for the electronic documents, and it applies the appropriate Retention and Disposal Schedule that authorizes the final disposition of the documents in the repository (either destruction or transfer to the State Archives). Users simply choose the appropriate file in which to store the documents. The software will automatically qualify the document for its final disposition when the required time period is met.

In our deployment of the RMA the records administrators developed file plans for groups of users based upon shared responsibilities. The users were assigned to the file plan specifically designed for their agency, rather than a unique file plan for each user. This approach possesses multiple benefits. First, it is less time consuming to create one file plan for a group, rather than for all individuals. Second, a common file plan for specific work groups promotes the centralized storage of records and encourages file sharing. Standardized file plans also make searching for co-workers' records much easier. It is important to stress, however, that security controls allow individuals using a shared file plan to see and access only files and documents that they have permission to use. The records administrators are responsible for maintaining user accounts and security controls, and this can be a challenge. If a security control is set improperly users can lose access to all RMA functions, which can be very frustrating.



It is essential that users have a sense of ownership and control over their file plan. Therefore, users must help develop their file plan. To promote accurate filing, file plans should be based upon users' current work processes, so they understand where to store their records. If users do not participate in the development stage, two things will generally happen; either they will misfile records, or worse yet, not use the RMA. If this happens, the benefit of the RMA is lost to the entire agency, and proper records management is nearly impossible.

## Retention and Disposal Schedules

Applying retention requirements to the records stored in the RMA is the primary purpose of the software. In Michigan, government agencies cannot legally destroy public records without the authorization of an approved Retention and Disposal Schedule. The responsibility for developing these schedules for the Executive Branch lies within DMB, Records Management. In 1997, after a series of consulting projects related to the management and preservation of electronic records, the State of Michigan began including electronic records on Retention and Disposal Schedules.

RMA software requires that all files be linked to a record series. A file can only be linked to one record series, however multiple files can be linked to a particular record series. It is the responsibility of the records administrator to link the files to the correct Retention and Disposal Schedule. Many of the agencies involved in the pilot project received new schedules beginning in 1997; however, all schedules were reviewed during the file plan development process to ensure that all files could be linked to an approved schedule.

## File Plan Development Process

Prior to the development of the RMA Pilot Project, the Records Management program and the State Archives of Michigan developed a class for state employees titled, "Organizing Electronic Files." The purpose of this class is to teach fundamental principles of filing and naming electronic documents. The project participants were among the first people to attend this class because the project team believed that they would need to understand these principles to use the RMA software.

When the project team began developing file plans, we were sure of two things: first, this would be a time consuming process; and second, we needed the cooperation of the project participants. Unfortunately, the previously mentioned delays by the vendor in delivering the RMA software prevented the project team from demonstrating it to the phase I participants before the file plans were developed. Therefore, we developed a one-hour orientation presentation to introduce the project participants to the RMA product, records management terms, and the purpose of file plans. The phase II participants attended an updated orientation that included an actual demonstration of the software. Appointments were scheduled with each project participant after they attended the orientation to begin developing the actual file plans.

Record inventories were conducted with all of the participants. The project team evaluated all existing electronic and manual filing systems. Participants were interviewed about their work

responsibilities, and with whom they shared records. This helped the project team map business processes, and identify those records that were used by multiple participants. The project team then compared the inventories of people who participated in the same business process. This comparison was essential for the development of a shared file plan. Next, we drafted a file plan for each group of participants. Each group reviewed the drafts, and they were asked to provide us with feedback about their proposed file plans. This input was crucial to give the participants a sense of ownership of the file plan. Our goal was to create a file plan that the participants would recognize, understand, and feel comfortable using to file documents. Therefore, some drafts were revised multiple times to accommodate the needs of the participants.

Once each group approved its file plan, the files were mapped with the appropriate Retention and Disposal Schedule. This step provided an additional check to ensure all records series created by the agency were listed on a schedule.

At the end of the pilot project the project team analyzed the file plans that we developed and determined that we could improve the way they are designed. We used the existing file plans and our general retention schedules as a model, and designed a file plan template for administrative records that are common to most agencies (see Appendix I). The file plan template also identifies how unique functional files should be organized within the file plan. While we will not modify the existing file plans to look like the template, all future file plans will use the template as a guide to determine which administrative files are needed and how they should be organized.

## Evolution

From the beginning, the project team knew that we would have to change the file plans as business processes changed, and as the users' needs changed. A process was established for the participants to request necessary changes. However, before the RMA, participants were accustomed to modifying their file systems on the fly as the need arose. Now they had to rely on the records administrators to create new files for them. Many participants were apprehensive about this lack of control.

Shortly after the participants began using the RMA, the project team realized that the file plans they designed were overly detailed; with primary, secondary and tertiary level files. We designed the file plans based on our experiences with paper and older electronic filing systems. The file plans reflected the philosophy that records needed to be classified in a precise manner. Some participants were happy with the hierarchical file plans. They liked the precise classification of records, and the ability to navigate to a specific file for their documents. For others however, this was confusing and tedious.

Many project participants associated each navigational click of the file plan with time. In addition, some were concerned that navigating the file plan increased the risk of inconsistent and inaccurate filing. The project team realized that RMA file plans are very different from those in the paper world. In an RMA file plan, if the secondary and tertiary files have the same retention period as the primary file, it often is not necessary to subdivide the primary or secondary files. For example, in the paper world it would make sense to file the work orders for each job

separately to facilitate retrieval. However, since the RMA's search engine can search for work orders by job, date and other characteristics, it is not necessary to file the orders separately when storing them in the RMA repository, unless they have different retention periods. As a result, the project team decided not to use the traditional hierarchical file plan structure when designing RMA file plans. Instead we created separate files for each business process, so the records are organized, but we did not create sub-files unless the user specifically requested them. This approach saves the RMA user time when filing each document, while still maintaining the integrity of the filing system. However, for this approach to be effective, RMA users must develop their searching skills, and their confidence using the search engine to retrieve documents.

## TRAINING

Before the project started, the team decided that it would be responsible for training the participants to use the RMA software. The grant proposal included provisions for hiring two project analysts who would devote the majority of their time to training project participants. However, before the project team could train the participants to use the software, we had to learn how to use it ourselves. We hired the software vendor to train the project team how to use and customize the software, and how to train others to use it. After training and a month of preparation and practice, the project analysts delivered several two-hour introductory workshops on using ForeMost to the participants. The goal of the introductory classes was to get participants started on the basics of using the software. We recognized that people rarely retain all of the information provided in these classes, and that we should not waste time teaching the advanced features during the introductory class.

Classroom training of the participants was completed in phases as each division's file plan was developed, and as the software was readied for deployment. The project analysts split the instruction of each class in half; each class was limited to ten students. The project team designed and delivered its own training modules: Introduction, Basic Terminology, Logging-in, User Preferences, Navigating File Plans, Filing Documents, Searching for Documents, Retrieving Documents, Re-Filing Documents, and Personal Selection Lists. The classes averaged two per day. Evaluations were distributed at the end of each class. The results tallied a 98% satisfaction rate by the participants towards the ForeMost software and instruction given. Immediately following classroom training and completion of software deployment, the project analysts visited each project participant at their workstation. Training was staged progressively for each office, so training began in November 2000 and ended in January 2001. On-site visits were intended to address any questions the participants had, and to review lessons from the classroom. Common questions from the participants included, "What is a record?", "Who is responsible for filing records?", and "When should records be filed into ForeMost?". While the participants never seemed to have a problem answering these questions in the hardcopy world, the project team concluded that additional training tools were needed to help people understand that the documents they create electronically are records.

The level of comfort with computer technology among the project participants varied from expert to novice. As a result, some of them adjusted faster than others to the software. The project analysts made a considerable effort to visit each participant daily for the first three

months to help with this adjustment and to encourage use of the software. User surveys reported that the project participants positively received their frequent presence at the work sites.

In March 2001 the project team asked each office to designate a SuperUser to serve as a liaison between their office and the project team. SuperUsers would be responsible for encouraging their co-workers to use the software, helping their co-workers learn the advanced features of the software, and sharing the concerns of their co-workers with the project team. The project team prepared a special Advanced Training class for the SuperUsers. The modules included: User Preferences, Advanced Searching, Retrieval Options, and How to Create New Files. Between March and September 2001, the SuperUsers met with the project team once per month to discuss the features of the software, and to discuss potential business process improvements that could be derived from using the software.

In addition to classroom training, the project team developed several other communication tools for the project participants, including a brochure; a staff contact card; a project web page; and a listserv for interaction between the project team and the project participants. The project analysts were also given pagers so project participants could contact them during business hours for assistance with the RMA software.

## BUSINESS PROCESS AND CULTURAL CHANGE ANALYSES

Records managers and archivists rarely succeed in selling our programs to others on their own merits. To many practitioners, filing, searching, and retrieving records is time-consuming and dull. These operations take diligence, commitment, and practice. The project team anticipated that there would be resistance to change, and developed a plan to analyze the project participants' reactions to the RMA software.

### Cultural Change Analysis

Tora Bikson of RAND Corporation was hired as a consultant to the project team to assist with the business process and cultural change analyses that were proposed in the plan of work for the pilot project. During her first visit the project team further developed a plan for our analyses and constructed baseline measurements for the project. The purpose of the consulting contract would be to collect qualitative and quantitative data about the changes that the RMA software would invite, and define the classes of participants according to their adaptability to new software. The consultant's emphasis focused upon the human-computer interaction.

The project team worked with the consultant to produce a baseline survey for the phase I project participants. The survey addressed background information, technical abilities with computers, learning styles, management of electronic information, and teamwork. The baseline quantitative survey was accompanied by interviews conducted by the consultant with a handful of project participants to gather baseline qualitative data. The answers were insightful. For example, we learned that the participants regard themselves as part of a "change-resistant culture." The survey also revealed that state employees viewed the Records Management Services as "the policing agency of a police agency" (the police agency is DMB.) Asking participants to deposit their records into a repository controlled by records managers did not improve this perception.

Also, the participants were very concerned that they would lose control over their ability to add and remove files from their file plan and that they would have to contact the records analyst every time a change to the file plan was needed. While universally acknowledging that a more efficient procedure for handling electronic information was necessary, DMB employees were tired of software pilot projects.

In addition to the baseline data that the project team used to plan its interaction with the project participants, follow-up interviews and surveys were conducted periodically throughout the project to further analyze the impact of the software. In addition to these techniques for analyzing the participants, other approaches for measuring the software were used.

For example, the project team analyzed usage reports that highlighted a slow but steady reaction to the software. These reports were compared with our initiative to identify potential business process improvements (BPIs) that could be realized using the software. This analysis demonstrated that participants who utilized the software through BPIs exhibited a higher frequency of use than those who did not experience a BPI. The project participants who did not use the software were primarily influenced by poor upper management support for the project, and a reluctance to adapt to new procedures. We have observed that usage of the software has primarily grown through the peer pressure associated with business process improvements.

The project team tried several approaches to improve participant acceptance, such as placing retention periods on electronic file titles, relaxing the filing rules to include nonrecords that users might need for business purposes, and adding transitory files for storing electronic documents participants wanted to keep for 60 days. Almost immediately, participants requested that retention codes be visible alongside the title of each file. Although the project team was concerned that participants would use this information to file records according to length of time retained, as opposed to the file's subject, after debate we decided to fulfill the request. It helped to comfort the participants. It also demonstrated how simple it was to have a request fulfilled, which made it easier for the participants to accept the software. Modifying filing rules was more complicated, because the participants are not comfortable with the concept of what constitutes a record. As the project team increased its focus on BPIs, we realized that traditional business rules had to be modified to support nonrecords as legitimate documents in ForeMost. This was the turning point for the project team: we told the participants if they needed to keep a document, store it in ForeMost.

Even though this was a project initiated by records analysts, it even took the professional records analysts time to adjust to ForeMost. The analysts were accustomed to a half-electronic/half-paper filing system, and to administer and file electronic records was time-consuming during the learning curve. The analysts disagreed about the kinds of records that should be stored in the repository, and needed to adjust to the concept of using the search engine as a retrieval tool, instead of navigating file plans. ForeMost did not appear to offer enough benefits to justify sincere use (complete transferal to electronic recordkeeping). The project director and supervisor to the analysts, increased the pressure on his staff to use the software, but even this effort did not result in full acceptance.

## Business Process Analysis

Initially, we intended to formally analyze the impact of the RMA software on the budget development and hiring processes within OSS. However, upon further consideration, the project team decided to focus on the collaborative efforts of the Forms and Publications Team (a special project team consisting of staff from all agencies within OSS) instead of the hiring process, because the hiring process was too similar to the budget process. During the file plan development process the project team mapped the business processes we identified. However, as project participants began to utilize the software, the project team could see that BPIs would best occur through peer pressure and by converting paper processes into electronic processes. We worked with various participants and SuperUsers to revisit many business processes. Then we collaborated with the participants to propose changes that would increase efficiency within the agency (efficiency using ForeMost was a secondary consideration.) After we gained approval from office managers and staff, we implemented these BPIs. After a month we interviewed the participants involved in the BPIs, and we quantified the observed changes on a spreadsheet (see Appendix 2); identifying each task within the process and applying costs and resources saved. This approach to business process analysis proved to be far more useful for building a business case for using RMA software than a formal evaluation of two pre-selected processes.

The most significant examples of BPIs were observed within the State Records Center. Our estimates show that we streamlined three of their business processes to produce an annual savings of over \$65,000. In fact, one of their employees ran out of assignments to work on and asked for additional ones to stay busy!

We discovered that for a variety of reasons, many participants never took full advantage of the software tools that were already available to them. The installation of ForeMost allowed these participants to re-analyze how they could maximize the potential of their existing tools, and then take advantage of the new software's retrieval and retention features. The project team focused on business processes that began electronically, but then converted to paper. We also looked at business processes that involved traditional mail and telephone communication that could be streamlined (with greater efficiency and accuracy) using web-based e-mail. The results of the BPIs were impressive. We observed significant reductions in cycle time for many business processes. This meant that participants now had time available to work on other duties that they otherwise would not have had time for. We also observed a reduced use of paper, which resulted in lower costs associated with the paper itself, filing cabinets, office space and records center storage. While many of these BPIs could have been implemented without ForeMost, the software's robust search engine, secure storage of electronic documents, and automated retention features, ensured that participants could depend on the electronic documents to serve as their official documentation.

## DISPOSITION

The project team modeled the electronic records disposition process upon that which is used for paper records. In Michigan, the State Records Center provides off-site storage for state government records. Software called Versatile Enterprise, by Zasio, Inc., controls the retention and disposition of boxes that are stored at the Records Center. On a quarterly basis, disposal

notices are generated from Versatile to notify creating agencies about which of their boxes are eligible for disposal (destruction or transfer to the State Archives). The project team decided to generate similar quarterly disposition reports from ForeMost to identify which electronic documents are eligible for disposal. However, several issues had to be addressed before the project team could receive authorization to dispose of any electronic documents.

ForeMost employs two types of retention periods, chronological and conditional. All retention is implemented at the file level, not the document level. A chronological retention period will qualify a document for disposal based upon the date it is filed into the ForeMost repository, plus a specified number of days, months or years. Chronological retention periods are relatively simple to implement. On the other hand, a conditional retention period will retain all documents in a file until a specific event occurs (a contract expires, an employee leaves, a project ends, etc.), and then will qualify all documents in that file for disposal a specified number of days, months or years after that event occurs. Unfortunately, the records administrator who runs the disposition report rarely knows when these events occur. Someone must notify the records administrator about these events; so the project team established a procedure for requesting this notification.

We designated disposition coordinators from each of the participating offices who agreed to be responsible for the review and approval of the disposition reports. We informed the coordinators that they would receive their conditional disposition reports on an annual basis. The conditional disposition reports will only identify those files (not documents) within their office's file plan that are still open (event has not occurred yet). The coordinators will receive 30 days to review the report and identify any files that should be closed. The coordinators will receive their chronological disposition reports on a quarterly basis. These reports will list each document that is eligible for disposal, the file in which the document is stored, and the name of the person who filed the document. Again, coordinators will have 30 days to review the report and approve the disposal of the documents. Coordinators will also have the option to identify specific chronological files in their file plan for which they do not want to review disposition reports, and therefore authorize the disposal of the documents within those files without reviewing them on quarterly reports. The first chronological and conditional disposition reports were distributed to the coordinators in September 2001.

The project team also asked the coordinators to review their file plan to identify any files that are currently identified as having a conditional retention period which could be converted to a chronological retention period (this may require a modification to the agency's Retention and Disposal Schedule). The Records Management Services evaluated its file plan in September 2001, and determined that most of its files with conditional retention periods could be converted.

Without RMA software, implementing the proper retention requirements for electronic records is extremely time consuming and inconsistent. Even in the paper world, implementing retention is dependent upon conscientious employees. The project team knew that RMA software is the only product capable of implementing record retention; however, the project team realized that the RMA software actually makes record retention easier and more consistent for electronic records than it is for paper, especially at the document level.

## PRESERVATION

The widespread use of desktop computing to create electronic records requires that a desktop records management solution be identified and implemented. We have demonstrated that electronic records that are created by common desktop programs can be organized and stored in a centralized repository that automatically implements the appropriate retention period for the records. The project team believes RMAs should be considered an essential tool for conducting business and managing records by most or all public and private sector organizations. From an archival perspective, the benefit of RMA software is that it can be used as an appraisal tool. Archivists can review the file plans to select and preserve the contents of specific files. Once the appraisal decision is made, the RMA software, aided by user input, can identify which electronic records possess archival value. It can also physically or logically separate these electronic records from those that will eventually be destroyed. Like an archival repository, RMAs add value to the electronic records that they store by documenting who created the records and when, by documenting who accessed the records and when, by mediating access through sophisticated security features, and by supporting file sharing and full-text searching.

However, RMAs are not preservation tools. The electronic records that are stored in the RMA's centralized repository remain in their native format. Access is facilitated by viewer technology or a software application on the local desktop. Since the electronic records remain in a software-dependent format, the RMA is not capable of ensuring that they remain accessible as underlying technology changes (e.g., operating systems, word processor formats, image formats). Therefore, a methodology must be developed for preserving archival electronic records and those with long-term retention requirements. In addition, for an archival repository to take custody, and both legal and intellectual control, of the electronic records at the end of the active phase of the record lifecycle, accessioning procedures must be developed for the archival electronic records that are disposed of by the RMA. Furthermore, consideration must be given to providing access to the electronic records that the archival repository takes custody of to future researchers. This level of access must meet or exceed the ease and quality of access that the active RMA users had; while taking into account that future researchers probably will not know exactly what records the repository contains.

After NHPRC awarded the grant to the State of Michigan, the electronic records archivist began participating on the advisory board of the NHPRC-funded electronic records preservation project at the San Diego Supercomputer Center (SDSC). This initiated a partnership between SDSC and the State of Michigan to address the long-term and permanent preservation of electronic records that are captured and managed using RMA software. In May 2001 we jointly submitted a new grant proposal to NHPRC to fund a two-year project, called the "PERM Project," that would develop a preservation model that could be used with any RMA product. The grant was awarded by NHPRC in November 2001, and the PERM Project began in July 2002.

In addition to the PERM Project, the RMA project team worked with TrueArc to develop archival accessioning procedures for electronic records stored in ForeMost. We used some nonrecords in a test file plan to determine if we could export archival electronic records from the active database in the RMA repository with their metadata. Then we imported the records into a new archival database in the same RMA repository. We wanted to take advantage of the RMA software's storage and access features, and maintain the electronic records with their metadata. Our goal was to demonstrate that the archival database in the RMA could mirror the file plan



from the active database, and therefore maintain the provenance and original order of the records. Unfortunately, ForeMost was not designed to transfer custody of the electronic records from one database to another, so the procedures we tested were very complex and not practical for an archival repository to use on a regular basis. However, TrueArc has informed us that they want to work with us to further develop this functionality for their product.

It is important to remember that this test did not resolve issues related to RMA software interoperability, nor did it resolve technological obsolescence issues. Furthermore, this test assumed that the creating agency and the archival repository used the RMA attribute fields for the same purpose. As a result of this test, our project team developed a procedure and training manual for RMA records administrators to promote the consistent use of the RMA attribute fields within Michigan government.

## RMA TECHNOLOGY

Even after we purchased and installed ForeMost, our project team continued to monitor the RMA software market and attend demonstrations of other products. We have some recommendations for the vendors of RMA software, and tips for potential customers.

1. Use a thin client architecture so the information technology support staff can deploy the software quickly and easily, with no need to visit or customize the desktop. Users of thick client software products need to be careful that they purchase an RMA product that will integrate easily with their existing architecture.
2. Avoid macros and integrations with other desktop software. These are unreliable, and desktop software applications change too frequently. Each change to a new version of desktop software will threaten the connectivity of the macro or integration. Also, macros and integrations can alter existing applications in a way that can inhibit their operation.
3. Integrate the product at the operating system level. Operating systems upgrade to new versions slower than desktop applications, and there are fewer to integrate.
4. Develop a robust web-based product that works the same way a client-server version of the product would work. Many organizations have distributed or field offices and employees who travel or telecommute. A client-server architecture is difficult to deploy in this type of work environment.
5. Make the RMA software appear invisible to the user. Allow the RMA server and file plan to look like another local drive and directory that the user accesses when saving and opening documents. Let the user perform the “save as” or “open” function, see the RMA drive, and navigate through their file plan to the desired file or document. This will boost user acceptance, and it will reduce the amount of training required.
6. Be aware of how RMA software is integrated with document management software (EDMS). We agree that EDMS products offer a lot of great features that users want and need, but that does not necessarily translate into RMA use. After users file their electronic documents into the EDMS, there does not appear to be an incentive for them to return to the document and officially “declare it a record.” Unless the business process is tightly defined so it is not completed until that additional step is taken, users will not file their documents twice; and even if they do, they probably will not be happy about it, because it is cumbersome and requires thought.

7. When selecting any new software product, do not ask a vendor if their product is capable of performing a particular task, because the answer is almost always “yes.” Ask the vendor to demonstrate exactly how the product performs the task, and analyze the demonstration from the perspective of the typical user. Remember the bottom line, the user is the most important person affected by a new product.

## ENTERPRISE-WIDE IMPLEMENTATION

Several key events during the project influenced the project team’s ability to market RMAs as a solution to electronic record retention problems. In November 2000 the Director of the Office of Support Services, and the project’s sponsor, announced that she would be leaving Michigan. This left the project without a sponsor and without an enthusiastic administrator to serve as a role model to the other project participants. In January 2001 the Director of DMB, also announced that she was leaving Michigan. This meant that we no longer had authorization to use the Director’s Office as a test site for phase II of the pilot project. Also in January, the Governor announced during his State of the State address that he would be creating a new department of History, Arts and Culture (later renamed History, Arts and Libraries), which would include the State Archives. Finally, in August 2001 the Governor issued an Executive Order creating a new Department of Information Technology (DIT) to centralize all IT administrative and technical support functions. As a result of this order, the DMB no longer has responsibility for shaping and issuing IT policy and standards. The order took effect in October 2001.

In September 2001 the project team approached the Director of HAL, to ask if he would support using HAL’s executive staff as the test site for phase II of the pilot project. We believed that it was important for the phase II installation to take place in an office environment that was administratively and functionally different from the phase I installation, and that it should demonstrate the capabilities of RMA software in an executive office setting. We explained to the Director that we wanted to conduct phase II in an office environment where RMA use would receive strong support from the top/down. He agreed to support phase II of the project, and the implementation of ForeMost within HAL began in October 2001. However, while phase II of the project did receive philosophical support from the top administrators, these same people did not actually use the software itself after it was installed on their computers. The result was that only 28% of the phase II users demonstrated consistent use of the RMA software. These use statistics are not significantly different than those for the phase I users.

Functioning software is only one facet of the success for a project like this. The human factor in many ways is far more significant. People are naturally resistant to change; and RMA software changes the way people file, search for and retrieve the documents they create and use on a daily basis. While these changes can produce benefits, these benefits will not be realized until the software is actually used, and many people will not use new software until benefits are demonstrated to them. A classic dilemma. Furthermore, filing and records management are not the primary responsibility of most people. Investing the time up-front to realize benefits is rarely a top priority, which is one reason why people have not taken full advantage of the features of the software they already have. The project team spent a considerable amount of time demonstrating how easy the RMA software was to use, and reducing participant filing activities

to a few keystrokes; but the reality of the workplace is that no matter how important and beneficial good records management may be, participants are intolerant of anything that consumes their time and thought.

This project clearly demonstrated that management support for change is essential to the success of an RMA. While RMA features that are still evolving to make the filing and retrieval of electronic documents appear seamless to users are very important, managers must learn that the ramifications of poor electronic records management can be disastrous. Managers must establish expectations and consequences for not following established procedures for electronic recordkeeping. At the same time, encouragement by management needs to focus on the positive benefits to the individual and the agency. True success with managing the cultural resistance to change was not observed. The only incentive that convinced people to use the RMA software was when we incorporated its use into a business process so it was impossible to perform the task without using it. Unfortunately, this does not translate into total desktop records management.

## CONCLUSION

The grant proposal for the RMA Pilot Project listed three goals for the project: (1) to assess the ability of an RMA to classify and manage electronic records and execute retention requirements, including the identification and segregation of archival records; (2) to analyze the cultural impact that RMAs have on agency staff, information technology personnel, records managers and archivists; and (3) to conduct a business process analysis and evaluate the potential for RMAs to be used in an enterprise-wide setting.

The project team demonstrated that RMA software does successfully classify and manage electronic records and execute their retention requirements. In addition, we ran reports that allowed us to identify and logically segregate the archival records from the non-archival records. We tested the capability to accession electronic records in the RMA from the active repository into an archival repository.

Our cultural change analysis showed that there is strong resistance to changing the way people file and access their electronic records, because less than a third of our project participants adopted the RMA software as their primary tool for storing their electronic records. However, our business process analysis showed that business process improvements can be derived from using RMA software, and when these improvements are adopted by the agency, RMA use and satisfaction increases.

Finally, while we believe that some type of RMA software is the long-term solution for managing electronic records, we discovered that these products must continue to evolve before they are used in an enterprise-wide setting. However, we also believe that people should not wait for an “ideal” product to evolve on the market before they begin to use RMA software. If people wait, more electronic records will be retained and destroyed inappropriately. Furthermore, we cannot build a business case for the need to deploy RMA software, if people do not use it.

As a result, the project team will continue to support the use of ForeMost among our project participants, we will continue to encourage more people to adopt it as an essential tool for storing electronic records, we will continue to work with TrueArc and other vendors to improve their products, and we will continue to promote the use of RMA software as a tool for managing, and eventually preserving, electronic records.

The project team made a considerable effort to share information with our colleagues about the lessons we learned through presentations at MAA, MAC, NAGARA, SAA and ARMA; our project web page with monthly reports; and articles in journals and newsletters.

Finally, the project team would like to thank NHPRC, the State of Michigan, the project participants, our consultant, the vendor, and our information technology support staff for their assistance and patience during the course of this project.

## **APPENDIX I**

### **RMA File Plan Template**

The files listed below are common to most agencies in state government. Some agencies may need all of these files, plus some additional files, and other agencies may need only a few of these files. This template is intended to initiate the discussion about which administrative files are needed, and it provides a standardized format for organizing administrative files. Files that are needed to support unique agency functions or business process will be located within file numbers 2000 - 8999. Record series numbers and retention periods are identified in the parenthesis after the file name.

#### **1000 Administrative--General (GS5.02B ACT+5)**

- 1010 Correspondence (GS5.01 CR+2)
- 1020 Forms/Templates (GS1 ACT)
- 1030 Freedom of Information Act Requests (GS5.06 CR+1)
- 1040 Labels and Lists (GS5.02B ACT+5)
- 1050 Special Events (GS5.02B ACT+5)
- 1060 Staff Meeting Minutes (GS5.05 CR+2)
- 1070 Staff Reports (GS5.02B ACT+5)
- 1080 Strategic Planning (GS5.02B ACT+5)

#### **1100 Budget (GS5.07 CR+5)**

- 1110 Audits (GS5.08 CR+5)
- 1120 Contracts (GS6.03 EXP+6)
  - 1120-10 Contract Number/Name (GS6.03 EXP+6)
- 1130 Expenditures (GS6.01 FY+7)
- 1140 FY # (GS5.07 CR+5)
- 1150 Grants (N/A)
  - 1150-10 Grant Number/Name (N/A)
- 1160 Procurement (GS6.11 FY+5)
- 1170 Travel (GS6.01 FY+7)

#### **1200 Human Resources (GS1 ACT)**

- 1210 Employee Files (GS7.01 ACT+7)
  - 1210-10 Employee Names in Alphabetical Order (GS7.01 ACT+7)
- 1220 Hiring (GS7.02 CR+3)
  - 1220-10 Applicant Correspondence (GS7.02 CR+3)
  - 1220-20 Interviews (GS7.02 CR+3)
  - 1220-30 Position Descriptions (GS7.02 CR+3)
- 1230 Leave Requests (GS7.04 CR+5)
- 1240 Organization Charts (N/A)

- 1250 Performance Management (GS7.01 ACT+7) *[note: these documents may be filed in 1210 instead]*
- 1260 Training/Professional Development (N/A)
- 1300 Information Technology (N/A)**
- 1310 Hardware/Software Acquisition and Installation (N/A)
  - 1310-10 Specific Products (N/A)
- 1320 Product Manuals (GS 1 ACT)
  - 1320-10 Specific Products (GS 1 ACT)
- 1330 Service/Help Requests (N/A)
  - 1330-10 Specific Products (N/A)
- 1340 Training (N/A)
- 1400 Legal (GS5.02B ACT+5)**
- 1410 Administrative Rules (GS5.15 EVT+2)
  - 1410-10 Rule Topic (GS5.15 EVT+2)
- 1420 Legislation (GS5.09 CR+5)
  - 1420-10 Legislation Topic (GS5.09 CR+5)
- 1430 Litigation (GS5.10 ACT+5)
  - 1430-10 Litigation Name (GS5.10 ACT+5)
- 1440 Memorandums of Understanding (N/A)
- 1500 Marketing/Public Relations/Outreach (GS5.02B ACT+5)**
- 1510 Newsletters (GS5.20 CR+10)
- 1520 Press Releases (GS5.17 CR+5 SAM)
- 1530 Speeches/Presentations (GS5.02B ACT+5)
- 1540 Web Pages (GS5.02B ACT+5)
- 1600 Policies and Procedures (GS5.21 EVT+2)**
- 1610 Policy/Procedure Topic (GS5.21 EVT+2)
- 1700 Professional Organizations (GS5.02B ACT+5)**
- 1710 Organization Name (GS5.02B ACT+5)
- 2000 Business Process #1 (list in alphabetical order)**
- 3000 Business Process #2 (list in alphabetical order)**
- 4000 Business Process #3 (list in alphabetical order)**
- 5000 Business Process #4 (list in alphabetical order)**
- 6000 Business Process #5 (list in alphabetical order)**
- 7000 Business Process #6 (list in alphabetical order)**
- 8000 Business Process #7 (list in alphabetical order)**
- 9000 Transitory (GS5.00 CR+1 month)**

# RMA Pilot Project

## Business Process Improvements

### Records and Forms Management Division

|  | Old Retrieval Time       | New Retrieval Time |
|--|--------------------------|--------------------|
| <b>Check-in/Check-out of Files (per order)</b>                       |                          |                    |
| Adding new user to list  | n/a                      | n/a                |
| Orders (average, regardless of type)                                 | 1 hour                   | 8 minutes          |
| Orders from e-mail   | 1 minute                 | 1 minute           |
| Order from phone   | 1.25 hours               | 10 minutes         |
| Orders from fax  | 1 minute                 | 1 minute           |
| Printing pack list and labels  | 1 minute                 | 1 minute           |
| Pulling files  | 10 minutes               | 1 minute           |
| Picking-up files   | n/a                      | n/a                |
| E-mail about NIB files   | 2 minutes                | 2 minutes          |
| Check-out files  | 10 minutes               | 1 minute           |
| Check-in files   | 10 minutes               | 1 minute           |
| Re-file files  | 10 minutes               | 1 minute           |
| <i>Sum Total</i>   | <i>1 hour 43 minutes</i> | <i>15 minutes</i>  |
| <b>Check-in/Check-out of Boxes (per order)</b>                       |                          |                    |
| Adding new user to list  | n/a                      | n/a                |
| Orders (average, regardless of type)                                 | 1 hour                   | 8 minutes          |
| Order boxes from e-mail  | 1 minute                 | 1 minute           |
| Order boxes from phone   | 1.25 hours               | 10 minutes         |
| Order boxes from fax   | 1 minute                 | 1 minute           |
| Find requested box   | 10 minutes               | 1 minute           |
| Printing box pack list   | 1 minute                 | 1 minute           |
| Pulling boxes  | 8 minutes                | 8 minutes          |
| Check-out boxes  | 10 minutes               | 1 minute           |
| Packing boxes  | 8 minutes                | 8 minutes          |
| Picking-up boxes   | n/a                      | n/a                |
| Tracking box   | 32 hours                 | 5 minutes          |
| Check-in boxes   | 10 minutes               | 1 minute           |
| <i>Sum Total</i>   | <i>33.5 hours</i>        | <i>33 minutes</i>  |
| <b>Transferring Boxes to Records Center (per transmittal)</b>        |                          |                    |
| Customer submits transmittals  | 8 hours                  | 4 hours            |
| Review incoming transmittals   | 5 minutes                | 5 minutes          |
| Entering in new transmittals   | n/a                      | n/a                |
| Printing out address labels  | 1 minute                 | 1 minute           |
| Printing box detail reports  | 5 minutes                | 1 minute           |
| Printing box labels  | 5 minutes                | 5 minutes          |
| Customer submits transfer request form                               | 16 hours                 | 5 minutes          |
| Mail and Delivery picks up boxes                                     | 16 hours                 | 16 hours           |
| Intransit room (electronic log tracking boxes that have not arrived) | 90 days                  | 60 days            |
| Shelving new boxes   | 30 minutes               | 10 minutes         |
| <i>Sum Total</i>   | <i>95 days</i>           | <i>62.5 days</i>   |
| <b>Generic</b>   |                          |                    |
| <b>Filing E-mail (per message received)</b>                          |                          |                    |
| Jackie   | 10 minutes               | 10 seconds         |
| Debbie   | 7 minutes                | 30 seconds         |
| <i>Average Per Person</i>  | <i>8.5 minutes</i>       | <i>20 seconds</i>  |
| <b>Mail &amp; Delivery/Materials Management Services</b>             |                          |                    |
| <b>Accountable Mail</b>  | n/a                      | n/a                |
| <i>Sum Total</i>   | <i>n/a</i>               | <i>n/a</i>         |
| <b>Internet Auction</b>  | n/a                      | n/a                |

|                       | Office Space Saved (cubic feet) | Records Center Boxes/Year Saved | Reams of Paper/Day Saved | Manhours/Day Saved | Old Cycle Time     | New Cycle Time       |
|-----------------------|---------------------------------|---------------------------------|--------------------------|--------------------|--------------------|----------------------|
|                       |                                 |                                 |                          |                    |                    |                      |
| n/a                   | n/a                             | n/a                             | 10 minutes               | n/a                | n/a                | n/a                  |
| 1 cubic foot          | n/a                             | 4 reams                         | 2 hours                  |                    | 6 hours            | 6 hours              |
| 1.66 cubic feet       | n/a                             | 4 reams                         | 5 minutes                |                    | 1 minute           | 30 seconds           |
| 1 cubic foot          | n/a                             | .5 ream                         | 1 hour                   |                    | 75 minutes         | 10 minutes           |
| 1 cubic foot          | n/a                             | 1.5 reams                       | 2 hours                  |                    | 8 hours            | 8 hours              |
| 1 cubic foot          | n/a                             | 1 ream                          | 1 minute                 |                    | 5 minutes          | 2 minutes            |
| 1 cubic foot          | n/a                             | 2 reams                         | 4 hours                  |                    | 8 minutes          | 5 minutes            |
| 2 cubic feet          | n/a                             | .5 reams                        | n/a                      |                    | 60 minutes         | 60 minutes           |
| 1 cubic foot          | n/a                             | 8 reams                         | 10 minutes               |                    | 15 minutes/day     | 6 minutes/day        |
| 1 cubic foot          | n/a                             | .5 reams                        | 1 minute                 |                    | 8 minutes          | 5 minutes            |
| 1 cubic foot          | n/a                             | .5 reams                        | 1 minute                 |                    | 8 minutes          | 5 minutes            |
| 1 cubic foot          | n/a                             | .5 reams                        | 1 minute                 |                    | 8 minutes          | 5 minutes            |
| <i>9 cubic feet</i>   | <i>n/a</i>                      | <i>17 reams</i>                 | <i>6.4 hours</i>         |                    | <i>7.86 hours</i>  | <i>7.46 hours</i>    |
|                       |                                 |                                 |                          |                    |                    |                      |
|                       |                                 |                                 |                          |                    |                    |                      |
| n/a                   | n/a                             | n/a                             | 2 minutes                | n/a                | n/a                | n/a                  |
| 1 cubic foot          | n/a                             | 2.5 reams                       | 3 minutes                |                    | 6 hours            | 6 hours              |
| .8 cubic feet         | n/a                             | 2 reams                         | 5 minutes                |                    | 1 minute           | 30 seconds           |
| .5 cubic feet         | n/a                             | 120 sheets                      | 3 minutes                |                    | 1.25 hours         | 10 minutes           |
| .5 cubic feet         | n/a                             | 25 reams                        | 1.5 minutes              |                    | 8 hours            | 8 hours              |
| 1 cubic foot          | n/a                             | .5 reams                        | 1 minute                 |                    | 8 minutes          | 5 minutes            |
| 1 cubic foot          | n/a                             | 2 reams                         | 2 minutes                |                    | 5 minutes          | 5 minutes            |
| 3 cubic feet          | n/a                             | .5 reams                        | 8 minutes                |                    | 8 minutes          | 8 minutes            |
| 3 cubic feet          | n/a                             | .5 reams                        | 1 minute                 |                    | 8 minutes          | 5 minutes            |
| 1 cubic foot          | n/a                             | 2 reams                         | 2 minutes                |                    | 8 minutes          | 5 minutes            |
| 1 cubic foot          | n/a                             | 1 ream                          | n/a                      |                    | n/a                | n/a                  |
| 20 cubic feet         | n/a                             | 15 reams                        | 5 minutes                |                    | 28 hours           | 5 minutes            |
| 3 cubic feet          | na                              | .5 reams                        | 1 minute                 |                    | 8 minutes          | 5 minutes            |
| <i>34 cubic feet</i>  | <i>n/a</i>                      | <i>24.5 reams</i>               | <i>25 minutes</i>        |                    | <i>34.75 hours</i> | <i>6.63 hours</i>    |
|                       |                                 |                                 |                          |                    |                    |                      |
|                       |                                 |                                 |                          |                    |                    |                      |
| 4 cubic feet          | 5 boxes                         | 1 ream                          | 4 hours                  |                    | 16 hours           | 4 hours              |
| 2 cubic feet          | n/a                             | .5 reams                        | 1.5 hours                |                    | 10 minutes         | 10 minutes           |
| 4 cubic feet          | n/a                             | .5 reams                        | 2 hours                  |                    | 8 hours            | 2 hours              |
| n/a                   | n/a                             | .5 reams                        | 2 minutes                |                    | 1 minute           | 1 minute             |
| n/a                   | n/a                             | .5 reams                        | 2 minutes                |                    | 1 minute           | 1 minute             |
| 3 cubic feet          | n/a                             | n/a                             | 5 minutes                |                    | 5 minutes          | 5 minutes            |
| 3 cubic feet          | 2 boxes                         | .5 reams                        | 5 minutes                |                    | 16 hours           | 5 minutes            |
| n/a                   | n/a                             | n/a                             | 4 hours                  |                    | 16 hours           | 16 hours             |
| 3 cubic feet          | n/a                             | 3 reams                         | 5 minutes                |                    | 5 minutes          | 5 minutes            |
| 1 cubic foot          | n/a                             | n/a                             | 10 minutes               |                    | 1 hour             | 20 minutes           |
| <i>20 cubic feet</i>  | <i>7 boxes</i>                  | <i>6.5 reams</i>                | <i>11.98 hours</i>       |                    | <i>57.36 hours</i> | <i>22.78</i>         |
|                       |                                 |                                 |                          |                    |                    |                      |
|                       |                                 |                                 |                          |                    |                    |                      |
| 1 cubic foot          | n/a                             | 50 sheets                       | 9.6 minutes              |                    | 30 minutes         | 15 seconds           |
| 1 cubic foot          | n/a                             | 5 sheets                        | 9 minutes                |                    | 1 hour             | 10 minutes           |
| <i>1 cubic foot</i>   | <i>n/a</i>                      | <i>27.5 sheets</i>              | <i>9.3 minutes</i>       |                    | <i>45 minutes</i>  | <i>5.125 minutes</i> |
|                       |                                 |                                 |                          |                    |                    |                      |
|                       |                                 |                                 |                          |                    |                    |                      |
| 1.5 cubic feet        | 2 boxes                         | .192 reams                      | .048 hours               |                    | 16 hours           | .167 hours           |
| <i>1.5 cubic feet</i> | <i>2 boxes</i>                  | <i>.192 reams</i>               | <i>.048 hours</i>        |                    | <i>16 hours</i>    | <i>.167 hours</i>    |
|                       |                                 |                                 |                          |                    |                    |                      |
| 3 cubic feet          | 1 box                           | 24 reams                        | 250 hours                |                    | n/a                | n/a                  |

# RMA Pilot Project

## Business Process Improvements

Old Retrieval Time

|           |
|-----------|
| Sum Total |
|           |

[illegible]



# RMA Pilot Project

## Business Process Improvements

| RMA Pilot Project                             |  |  |  | Business Process Improvements |                    |                        |  |  |  |               |                                 |                                 |                           |                     |                   |  |  |  |  |                |                |                        |  |
|---|--|--|--|-------------------------------|--------------------|------------------------|--|--|--|---------------|---------------------------------|---------------------------------|---------------------------|---------------------|-------------------|--|--|--|--|----------------|----------------|------------------------|--|
|   |  |  |  | Old Retrieval Time            | New Retrieval Time | Percentage Improvement |  |  |  |               | Office Space Saved (cubic feet) | Records Center Boxes/Year Saved | Reams of Paper/Year Saved | Manhours/Year Saved | Cost Savings/Year |  |  |  |  | Old Cycle Time | New Cycle Time | Percentage Improvement |  |
| Records and Forms Management                  |  |  |  |                               |                    |                        |  |  |  |               |                                 |                                 |                           |                     |                   |  |  |  |  |                |                |                        |  |
| Check-in/Check-out of Files                   |  |  |  | 1 hour 43 min.                | 15 minutes         | 86%                    |  |  |  | 9 cubic feet  | n/a                             | 4250 reams                      | 6.4 hours                 |                     |                   |  |  |  |  | 7.86 hours     | 7.46 hours     | 6%                     |  |
| Sum Total                                     |  |  |  |                               |                    |                        |  |  |  | \$162.00      | n/a                             | \$11,857.50                     | \$640.00                  | \$12,659.50         |                   |  |  |  |  |                |                |                        |  |
|   |  |  |  |                               |                    |                        |  |  |  |               |                                 |                                 |                           |                     |                   |  |  |  |  |                |                |                        |  |
| Check-in/Check-out of Boxes                   |  |  |  | 33.5 hours                    | 33 minutes         | 99%                    |  |  |  | 34 cubic feet | n/a                             | 6125 reams                      | 104 hours                 |                     |                   |  |  |  |  | 34.75 hours    | 6.63 hours     | 81%                    |  |
| Sum Total                                     |  |  |  |                               |                    |                        |  |  |  | \$612.00      | n/a                             | \$17,088.75                     | \$1,040.00                | \$18,740.75         |                   |  |  |  |  |                |                |                        |  |
|   |  |  |  |                               |                    |                        |  |  |  |               |                                 |                                 |                           |                     |                   |  |  |  |  |                |                |                        |  |
| Transferring Boxes to R.C.                    |  |  |  | 95 days                       | 62.5 days          | 35%                    |  |  |  | 20 cubic feet | 7 boxes                         | 1625 reams                      | 2995 hours                |                     |                   |  |  |  |  | 57.36 hours    | 22.78 hours    | 61%                    |  |
| Sum Total                                     |  |  |  |                               |                    |                        |  |  |  | \$360         | \$35.00                         | \$4,533.75                      | \$29,950                  | \$34,178.75         |                   |  |  |  |  |                |                |                        |  |
|   |  |  |  |                               |                    |                        |  |  |  |               |                                 |                                 |                           |                     |                   |  |  |  |  |                |                |                        |  |
| Generic                                       |  |  |  |                               |                    |                        |  |  |  |               |                                 |                                 |                           |                     |                   |  |  |  |  |                |                |                        |  |
| E-mail  |  |  |  | 8.5 minutes                   | 20 seconds         | 96%                    |  |  |  | 1 cubic foot  | n/a                             | 14 reams                        | 37.5 hours                |                     |                   |  |  |  |  | 45 minutes     | 5.125 minutes  | 89%                    |  |
| Average Per Person                            |  |  |  |                               |                    |                        |  |  |  | \$18          | n/a                             | \$39.06                         | \$375.00                  | \$432.06            |                   |  |  |  |  |                |                |                        |  |
|   |  |  |  |                               |                    |                        |  |  |  |               |                                 |                                 |                           |                     |                   |  |  |  |  |                |                |                        |  |
| Mail & Delivery/Materials Management Services |  |  |  |                               |                    |                        |  |  |  |               |                                 |                                 |                           |                     |                   |  |  |  |  |                |                |                        |  |
| Accountable Mail                              |  |  |  | 24 minutes                    | n/a                | n/a                    |  |  |  | 2 cubic feet  | n/a                             | 48 reams                        | 24 hours                  |                     |                   |  |  |  |  | 16 hours       | 0.167 hours    | 99%                    |  |
| Sum Total                                     |  |  |  |                               |                    |                        |  |  |  | \$36          | n/a                             | \$133.92                        | \$240                     | \$409.92            |                   |  |  |  |  |                |                |                        |  |
|   |  |  |  |                               |                    |                        |  |  |  |               |                                 |                                 |                           |                     |                   |  |  |  |  |                |                |                        |  |
| Internet Auction                              |  |  |  | n/a                           | n/a                | n/a                    |  |  |  | 3 cubic feet  | 1 boxes                         | 24 reams                        | 250 hours                 |                     |                   |  |  |  |  | n/a            | n/a            | n/a                    |  |
| Sum Total                                     |  |  |  |                               |                    |                        |  |  |  | \$54          | \$5                             | \$66.96                         | \$2,500                   | \$2,625.96          |                   |  |  |  |  |                |                |                        |  |
|   |  |  |  |                               |                    |                        |  |  |  |               |                                 |                                 |                           |                     |                   |  |  |  |  |                |                |                        |  |
| Print and Graphics Services                   |  |  |  |                               |                    |                        |  |  |  |               |                                 |                                 |                           |                     |                   |  |  |  |  |                |                |                        |  |
| Contract Paper Form                           |  |  |  | 34 hours                      | 42 minutes         | 98%                    |  |  |  | 3 cubic feet  | n/a                             | 250 reams                       | 34 hours                  |                     |                   |  |  |  |  | 48 hours       | 4 hours        | 92%                    |  |
| Sum Total                                     |  |  |  |                               |                    |                        |  |  |  | \$54          | n/a                             | \$697.50                        | \$340                     | \$1,091.50          |                   |  |  |  |  |                |                |                        |  |
|   |  |  |  |                               |                    |                        |  |  |  |               |                                 |                                 |                           |                     |                   |  |  |  |  |                |                |                        |  |
| Boise Order Form                              |  |  |  | 34 hours                      | 42 minutes         | 98%                    |  |  |  | 3 cubic feet  | n/a                             | 250 reams                       | 34 hours                  |                     |                   |  |  |  |  | 48 hours       | 4 hours        | 92%                    |  |
| Sum Total                                     |  |  |  |                               |                    |                        |  |  |  | \$54          | n/a                             | \$697.50                        | \$340                     | \$1,091.50          |                   |  |  |  |  |                |                |                        |  |
|   |  |  |  |                               |                    |                        |  |  |  |               |                                 |                                 |                           |                     |                   |  |  |  |  |                |                |                        |  |
| P&G Paper Special Stock Form                  |  |  |  | 57 hours                      | 8.5 hours          | 86%                    |  |  |  | 5 cubic feet  | n/a                             | 312.5 reams                     | 35 hours                  |                     |                   |  |  |  |  | 56 hours       | 5 hours        | 92%                    |  |
| Sum Total                                     |  |  |  |                               |                    |                        |  |  |  | \$90          | n/a                             | \$871.87                        | \$350                     | \$1,311.87          |                   |  |  |  |  |                |                |                        |  |
|   |  |  |  |                               |                    |                        |  |  |  |               |                                 |                                 |                           |                     |                   |  |  |  |  |                |                |                        |  |
| P&G Machine Supply Form                       |  |  |  | 57 hours                      | 8.5 hours          | 86%                    |  |  |  | 5 cubic feet  | n/a                             | 312.5 reams                     | 35 hours                  |                     |                   |  |  |  |  | 56 hours       | 5 hours        | 92%                    |  |
| Sum Total                                     |  |  |  |                               |                    |                        |  |  |  | \$90          | n/a                             | \$871.87                        | \$350                     | \$1,311.87          |                   |  |  |  |  |                |                |                        |  |

### Key

Office Space--Cost of cubed footage: \$18.00

Records Center box: \$5.00

1 ream of paper: \$2.79

Average hourly wage: \$10.00

Manhours/year: 2000

Work days/year: 250

1 lateral five drawer cabinet (12.6 sq.ft.): \$1650.00

1 vertical five drawer cabinet (7 sq.ft.): \$327.00